WHAT IS CLAIMED IS:

1. An analog front end, comprising:

a converter configured to convert a differential input signal to a single-ended input signal, and convert a single-ended output signal to a differential output signal; and

a transformer configured to couple the differential input signal from a twisted pair telephone line to the converter, and couple the differential output signal from the converter to the twisted pair telephone line.

2. The analog front end of claim 1 wherein the transformer comprises a plain old telephone system splitter.

3. The analog front end of claim 1 wherein the converter comprises a hybrid splitter.

4. The analog front end of claim 1 further comprising an up stream circuit configured to condition the single-ended output signal, and a down stream circuit configured to condition the single-ended input signal.

5. The analog front end of claim 4 wherein the up stream circuit comprises a line driver in combination with a filter.

6. The analog front end of claim 4 wherein the down stream circuit comprises an amplifier in combination with a filter.

7. The analog front end of claim 4 wherein the down stream circuit comprises an amplifier having automatic gain control.

8. The analog front end of claim 7 wherein the automatic gain control comprises a variable attenuator configured to attenuate the single-ended input signal.

9. The analog front end of claim 8 wherein the variable attenuator comprises a voltage controlled resistor.

10. The analog front end of claim 9 wherein the voltage controlled resistor comprises a field effect transistor.

11. The analog front end of claim 10 wherein the field effect transistor comprises a drain coupled to the amplifier, a source coupled to a bias voltage, and a gate configured to receive a voltage to control the attenuation of the single-ended input signal.

12. The analog front end of claim 4 wherein the down stream circuit comprises an echo canceller.

13. The analog front end of claim 12 wherein the echo canceller is responsive to the single-ended input signal and the single-ended output signal.

14. The analog front end of claim 13 wherein the echo canceller comprises a comparator configured to compare the single-ended input signal and the single-ended output signal.

15. The analog front end of claim 1 further comprising a filter configured to coupled the transformer to the twisted pair telephone line, the filter having a plurality of series capacitors and shunt inductors.

16. The analog front end of claim 1 further comprising a filter configured to coupled the transformer to the twisted pair telephone line, the filter having a plurality of components each having a breakdown voltage level sufficient to withstand lightning.

17. The analog front end of claim 1 further comprising a filter configured to coupled the transformer to the twisted pair telephone line, the filter having a plurality of components providing a first impedance to lightning between the twisted pair telephone line and the transformer and a second impedance to lightning between the twisted pair telephone line and ground, the first impedance being higher than the second impedance.

18. The analog front end of claim 17 wherein the components each comprises a breakdown voltage level sufficient to withstand the lightning.

19. An analog front end, comprising:

converting means for converting a differential input signal to a single-ended input signal, and converting a single-ended output signal to a differential output signal; and

interface means for coupling the differential input signal from a twisted pair telephone line to the converting means, and coupling the differential output signal from the converting means to the twisted pair telephone line.

20. The analog front end of claim 19 wherein the interface means comprises a transformer.

21. The analog front end of claim 20 wherein the transformer comprises a plain old telephone system splitter.

22. The analog front end of claim 21 wherein the converting means comprises a hybrid splitter.

23. The analog front end of claim 19 further comprising an up stream conditioning means for conditioning the single-ended output signal, and a down stream conditioning means for conditioning single-ended input signal.

24. The analog front end of claim 23 wherein the up stream conditioning means comprises a line driver in combination with a filter.

25. The analog front end of claim 23 wherein the down stream conditioning means comprises an amplifier in combination with a filter.

26. The analog front end of claim 23 wherein the down stream conditioning means comprises distortion reduction means for reducing distortion.

27. The analog front end of claim 26 wherein the distortion reduction means comprises an echo canceller.

28. The analog front end of claim 26 wherein the distortion reduction means comprises an amplifier having automatic gain control.

29. The analog front end of claim 23 wherein the down stream conditioning means comprises an amplifier having automatic gain control means for controlling gain of the amplifier.

30. The analog front end of claim 29 wherein the automatic gain control means comprises variable attenuation means for attenuating the single-ended input signal.

31. The analog front end of claim 31 wherein the variable attenuation means comprises a voltage controlled resistor.

32. The analog front end of claim 31 wherein the voltage controlled resistor comprises a field effect transistor.

33. The analog front end of claim 32 wherein the field effect transistor comprises a drain coupled to the amplifier, a source coupled to a bias voltage, and a gate configured to receive a voltage to control the attenuation of the single-ended input signal.

34. The analog front end of claim 26 wherein the down stream conditioning circuit comprises echo cancellation means for cancelling an echo on the single-ended input signal.

35. The analog front end of claim 34 wherein the echo cancellation means is responsive to the single-ended input signal and the single-ended output signal.

36. The analog front end of claim 35 wherein the echo cancellation means comprises means for comparing the single-ended input signal and the single-ended output signal.

37. The analog front end of claim 19 further comprising shunting means for shunting lightning to ground, the shunting means being configured to coupled the interface means to the twisted pair telephone line.

38. The analog front end of claim 37 wherein the shunting means comprises a plurality of components each having a breakdown voltage level sufficient to withstand the lightning.

39. The analog front end of claim 37 wherein the shunting means comprises a plurality of series capacitors and shunt inductors.

40. A method of conditioning analog signals, comprising:

receiving a differential input signal from a twisted pair telephone line;

converting the differential input signal to a single-ended input signal;

converting a single-ended output signal to a differential output signal; and

transmitting the differential output signal over the twisted pair telephone line.

41. The method of claim 40 further comprising filtering and amplifying the single-ended input signal.

42. The method of claim 40 further comprising filtering and amplifying the differential output signal.

43. The method of claim 42 wherein the amplification of the differential output signal comprises applying automatic gain control.

44. The method of claim 43 wherein the automatic gain control comprises attenuating the single-ended input signal.

45. The method of claim 44 wherein the variable attenuation is performed with a voltage controlled resistor.

46. The method of claim 45 wherein the voltage controlled resistor comprises a field effect transistor.

47. The method of claim 40 further comprising processing the single-ended input signal to reduce distortion.

48. The method of claim 47 wherein the processing is performed with an echo canceller.

49. The method of claim 48 wherein the echo canceller comprises a comparator.

50. The method of claim 40 further comprising filtering the differential input signal to shunt lightning to ground.

51. The method of claim 50 wherein the filtering is performed with a plurality of series capacitors and shunt inductors.

52. The method of claim 50 wherein the filtering is performed with a plurality of components each having a breakdown voltage level sufficient to withstand the lightning.

53. The method of claim 50 wherein the filtering is performed with a plurality of series capacitors and shunt inductors each having a breakdown voltage level sufficient to withstand the lightning.

54. The method of claim 40 further comprising transmitting the single-ended input signal to a digital line subscriber transceiver, and receiving the single-ended output signal from the digital line subscriber transceiver.

55. A lightning protection circuit, comprising a plurality of series capacitors and shunt inductors each having a breakdown voltage level sufficient to withstand lightning.

56. The lightning protection circuit of claim 55 wherein the capacitors and inductors comprises a first input impedance to lightning and a second input impedance to a signal having a higher frequency than the lightning, the first input impedance being higher than the second input impedance.

57. An automatic gain control circuit, comprising:

an amplifier; and

a field effect transistor comprising a drain coupled to the amplifier, a source coupled to a bias voltage, and a gate configured to receive a voltage to control attenuation of the amplifier.

58. The automatic gain control of claim 57 comprising a second amplifier coupled to the amplifier and a second field effect transistor coupled to the second amplifier, the second field effect transistor having a drain coupled to the second amplifier, a source coupled to a second bias voltage, and a gate configured to receive a second voltage to control attenuation of the second amplifier.